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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 09/942,114  | 08/29/2001  | Sujit Sharan         | 303.629US1            | 6928             |
| 21186   | 7590        | 10/23/2003           |                       | EXAMINER         |
| SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.<br>P.O. BOX 2938<br>MINNEAPOLIS, MN 55402 |             |                      | MEEKS, TIMOTHY HOWARD |                  |
|   |             |                      | ART UNIT              | PAPER NUMBER     |
|   |             |                      | 1762                  |                  |

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/942,114             | SHARAN, SUJIT       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Timothy H. Meeks       | 1762                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 14 August 2003.

2a) This action is **FINAL**.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-39 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) 5,11-13,15 and 17-39 is/are allowed.

6) Claim(s) 1-4,6-10,14 and 16 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892)      4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)      5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### *Application Status*

The amendment filed on 14 August 2003 in response to the Office Action mailed on 12 May 2003 has been fully considered. Applicants have amended claims 1, 5, 11, 13, 15-18, 21, 24, 28, and 36. Claims 1-39 are pending.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto et al. (6,022,586).

Hashimoto discloses forming precoating layers on the internal surfaces of a reactor having a showerhead at an internal temperature of 500 to 800 °C (col. 9, line 54- col. 10, line 35) and forming the material of the precoating layers on an integrated circuit substrate in the precoated reactor at a temperature of 700 °C (col. 11, lines 10-15).

Hashimoto does not explicitly disclose that the precoating films are formed on the showerhead or that a different or higher temperature of the showerhead than the normal deposition temperature is used. However, because the purpose of the precoating films is to render the thermal reflectance in the reactor similar for the wafer deposition and thereby improve film formation reproducibility (col. 9, lines 60-66), it would have been obvious to coat all parts of the reactor including the showerhead with the precoating layers because doing so would be

expected to prevent the showerhead from changing the thermal reflectivity during processing and hence improve film formation reproducibility. Furthermore, given the range of 500 to 800 °C as the internal temperature for precoating the reactor and the 700 °C temperature for coating the substrate, it would have been obvious to use temperatures different from or higher than the 700 °C deposition temperature with a reasonable expectation of these temperatures being operable as is explicitly disclosed by Hashimoto.

***Response to Arguments***

Applicant's arguments filed 14 August 2003 have been fully considered but they are not persuasive.

Applicants argue that the rejection does not establish a *prima facie* case of obviousness because the rejection does not set forth evidence of the desirability of modifying Hashimoto to use different or higher precoating than substrate coating temperatures. The examiner submits that a *prima facie* case of obviousness has been established in that Hashimoto discloses the use of temperatures in the range of 500 to 800 °C for the precoating step and to use a coating temperature of 700 °C for the substrate coating, as set forth in the rejection. The operable range of temperatures used for the precoating step disclosed in the reference is clearly inclusive of temperatures both different and higher than the 700 °C substrate coating temperature. Based on this disclosure, one of ordinary skill in the art would expect that the use of temperatures disclosed by Hashimoto in the claimed range to be operable and hence use of these temperatures would have been obvious based upon this reasonable expectation of operability. The argument with respect to thermal reflectivity and emissivity is considered moot because Hashimoto

discloses that temperatures in the range of 500 to 800 °C can be used for precoating and a temperature of 700°C can be used for substrate coating, which by no means suggests that the same temperature must be used for these steps. Furthermore, thermal reflectance and emissivity are properties of the film composition or material and not necessarily the temperature at which the material is deposited, therefore it is not clear that Hashimoto suggests that the same temperature must be used for precoating and substrate coating based on the disclosure at col. 9, lines 61-65, as is argued by applicants.

***Allowable Subject Matter***

Claims 5, 11-13, 15, and 17-39 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The main patentable feature(s) of the claims listed directly above are use of a temperature difference greater than 50 % different from the normal deposition temperature which is outside of the operable temperatures disclosed by Hasimoto and not reasonably suggested thereby, provision of the different temperature by changing the separation between the showerhead and substrate holder, providing a material layer comprising Ti or consisting essentially of Ti, Al, Cl, and N atoms, or providing a plasma at the showerhead. Each of these features are not taught or fairly suggested by the prior art as recited in the claimed process.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

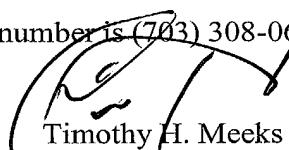
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy H. Meeks whose telephone number is (703) 308-3816. The examiner can normally be reached on Mon., Tues., Thurs.(6-6:30), Fri.(6:30-10:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Timothy H. Meeks  
Primary Examiner  
Art Unit 1762